In the Claims:

Amend claims 1, 9, 20-21, 31, and 45 as follows[1]:

1. (amended) A hydrogen gas detector for detection of hydrogen gas in a gaseous environment, said detector comprising a light/heat source, an optical detector, and an optical barrier therebetween, wherein the optical barrier is disposed in proximity to the light/heat source so that the optical barrier is simultaneously illuminated and heated by said light/heat source, wherein the optical barrier responds to the presence of hydrogen by responsively changing from a first optical state to a different second optical state, and whereby transmission of light from said light/heat source through said optical barrier is altered by the presence of hydrogen and said altered transmission is sensed by said optical detector to provide an indication of the presence of hydrogen gas in the gaseous environment.

9. (amended) The hydrogen gas detector of claim 7, wherein surface morphology roughness of the optical output surface of the light/heat source prior to deposition of the rare earth metal thin film has been increased by treatment of the optical output surface comprising a roughening step selected from the group consisting of mechanical roughening, chemical roughening, deposition of highly exfoliated or porous inorganic underlayers, and deposition of porous polymer underlayers, to thereby increase the response speed of the rare earth metal thin film as compared with a corresponding unroughened optical output surface.

20. (amended) The hydrogen gas detector of claim 18, wherein said optical barrier comprises a multi-layer structure deposited on the optical output surface of said optical waveguide, said

[1] A marked up version of the amended claims is set out in **Appendix A** hereof, consistent with the requirements of 37 C.F.R. §1.121(c)(i)(ii). A clean copy of all the pending claims 1-62 is set out in **Appendix B** hereof.

multi-layer structure comprising at least a first and a second layer, wherein the first layer absorbs optical energy of a first wavelength and transfers said optical energy of the first wavelength into thermal energy, while remaining transparent or translucent to optical energy of a second wavelength, and wherein the second layer comprises a rare earth metal thin film, the optical properties of which are responsive to the presence and concentration of hydrogen gas in the surrounding environment.

21. (amended) A hydrogen gas detector for detection of hydrogen gas in a gaseous environment, said detector comprising a light/heat source, at least one optical detector, and at least one optical barrier deposed between the light/heat source and each detector in proximity to the light/heat source so that the optical barrier is simultaneously illuminated and heated by said light/heat source, wherein the optical barriers respond to the presence of hydrogen by responsively changing from a first optical state to a different second optical state, and whereby transmission of light from said light/heat source through said optical barriers is altered by the presence of hydrogen and said altered transmission is sensed by said optical detectors to provide an indication of the presence and concentration of hydrogen gas in the gaseous environment.

31. (amended) The hydrogen gas detector of claim 30, wherein the light source comprises a light-generating element selected from the group consisting of incandescent bulbs, light emitting diodes, fluorescent lamps, electroluminescent lamps, and optical lasers, and optical waveguides illuminated by any such light-generating element.

45. (amended) A hydrogen detection system for monitoring an extended or remote area region for the incursion or generation of hydrogen therein, said hydrogen detection system comprising a